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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yutaka Nanno

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1949

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03/18/2004

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EXAMINER

HU, SHOUXIANG

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 03/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,795

Applicant(s)

NANNO ET AL.

Examiner

Shouxiang Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,4,6,8-11,15,17,21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4,6,8-11,13,15,17,21 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

In order to accommodate the applicant's amendment filed on 10/20/03, which was entered after the 10-27-03 final rejection was sent out, the finality of that final rejection is withdrawn. And, a new final rejection is set forth below.

Drawings

Figure 38 is objected to as noted in the previous Office action. Applicant's request for replacing the drawing sheet for Fig. 38 is not approved, as the corrected drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson. In addition, new corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin.

Claim Objections

Claims 4, 6, 8-11, 13, 15, 17, 21 and 22 are objected to because of numerous informalities/defects, including:

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In claims 4, 8, 9-11, 15, 17, 21 and 22, the term of "the source region and drain region located on either side of the channel region" should read as: -- the source region and drain region respectively located on two sides of the channel region--.

In claims 10, and 22, the term of "W-Vlc" should read as: --W*Vlc--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 8-10, as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunii et al. ("Kunii"; US 5,412,493) in view of Yamazaki et al. ("Yamazaki"; US 6,218,219).

Kunii discloses a thin film transistor (Figs. 1-4, also see col. 8, lines 47-48, col. 9, lines 55-57, and col. 11, lines 35-36) used in a display device, comprising a polysilicon layer (102) including a channel region (2) and LDD region or regions (6) between S/D regions therein, wherein the length of the LDD region ΔL can be 1 microns, channel width and length can both be of 3 microns, and the S-D voltage V_{lc} can be 5 V, which naturally satisfy the inequalities (Inq. 3, 4 and 20) as defined in claims 8-10, respectively.

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Although Kunii does not expressly disclose that the channel width can be 2 microns or less, one of ordinary skill in the art would readily recognize that the channel width of TFT is well-recognized parameter of importance subject to routine experimentation and optimization, that a small channel width helps to reduced the size of the TFT, and that the channel width of a TFT can be readily as small as 2 microns or less, as evidenced in Yamazaki (see col. 9, 18-22 and col. 25, 66-67).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to make the TFT of Kunii with the channel width being 2 microns or less, as taught in Yamazaki, so that a TFT display device with optimized performance and reduced size would be obtained.

2. Claims 4, 6, 11, 13, 21 and 22, as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunii in view of Yamazaki as applied to claims 8-10 above, and further in view of Applicant's admitted prior art ("AAPA").

The disclosures of Kunii and Yamazaki are discussed as applied to claims 8-10 above.

Although Kunii and Yamazaki do not expressly disclose that the sheet resistance of the LDD region can be about $20 \text{ k}\Omega/\square$ to $100 \text{ k}\Omega/\square$, one of ordinary skill in the art would readily recognize that the sheet resistance of the LDD region in TFT is a well-recognized parameter of importance subject to routine experimentation and

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optimization, that the art-recognized normal range of the sheet resistance of the LDD region is about $20 \text{ k}\Omega/\square$ to $100 \text{ k}\Omega/\square$, as evidenced in AAPA (see page 3, lines 6-9).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to make to incorporate the normal-range LDD sheet resistance of AAPA into the TFT device collectively taught by Kunii and Yamazaki above, so that a TFT display device with optimized performance would be obtained.

3. Claims 15 and 17, as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunii in view of Yamazaki and AAPA as applied to claims 4, 6, 11, 13, 21 and 22 above, and further in view of in view of Ohta et al. ("Ohta"; US 6,532,053).

The disclosure of Kunii, Yamazaki and AAPA are discussed as applied to claims 4, 6, 11, 13, 21 and 22 above.

Although Kunii, Yamazaki and AAPA do not expressly disclose that the TFT display device can further comprise a backlight having a brightness of about 2000 cd/m^2 or higher, Ohta teaches that a TFT display device commonly includes a backlight with a brightness that can be 3000 cd/m^2 (see col. 3, line 60) for achieving adequate display brightness.

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to incorporate the backlight of Ohta into the TFT display device collectively taught by Kunii, Yamazaki and AAPA above, so that a TFT display device with adequate display brightness would be obtained. And, in such a TFT display

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device, with backlight brightness of 3000 cd/m^2 and the channel width of 2 microns, the recited expression (Ineq. 6) would be satisfied naturally.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is (703)306-5729. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SH
March 11, 2004

A handwritten signature in black ink, appearing to read "Shouxiang Hu", written in a cursive style.

SHOUXIANG HU
PRIMARY EXAMINER